

independent claims and/or for clarity. It is submitted that the present application is in condition for allowance for the following reasons.

Initially, it will be noted that reference to the claims has been deleted from the specification as such references are not preferred in US practice.

In paragraph 1 of the Detailed Action, claims 6 and 8-18 were rejected under 35 USC § 112 for being indefinite. By this Amendment, antecedent basis for dependent claim 6 has now been provided at page 13 of the specification. In addition, the moulding chamber front has been better defined in claim 8 and the noted correction made to claim 12. Further, claims 9-18 have been rewritten to better define the apparatus with apparatus limitations, though obviously some functional language remains as such functional language serves to foster an understanding of the claim language and hence to make the claims more definite. Still further, all of the claims have been amended to be in better condition for US practice, and a new claim 19 has been added which is similar to claim 12 but which provides proper antecedent basis for claims 17 and 18 which are now dependent therefrom. In view of all of these corrections, it is submitted that all of the present claims are now all definite so that the rejection under § 112 should now be withdrawn.

In paragraph 3, apparatus claims 9-18 were rejected under 35 USC § 103 as being unpatentable over the Larsen patent. However, for the following reasons, it is submitted that independent claim 9 and claims 10-19 dependent therefrom are all allowable over this reference.

As now particularly claimed in independent claim 9, the present invention includes a controller which controls the velocity of the squeeze plate and the velocity of

the pivoted squeeze independently relative to one another as the moving means therefor moves the squeeze plate and pivoted squeeze plate to form the mould part.

The Larsen patent discloses an apparatus for forming a plurality of moulds with a squeeze plate and a pivoted squeeze plate in an overall similar process using a similar apparatus to that of the present invention. However, the Larsen patent particularly describes a time sequential position and pressure control, rather than any velocity control as now claimed in independent claim 9. While the examiner has noted that the Larsen patent must have a means for independently controlling the movement of the two squeeze plates, as the present invention does, that means is controlled for pressure and/or position of the squeeze plates, and not for velocity of the squeeze plates as presently and specifically claimed.

Therefore, as there is no teaching or suggestion in the Larsen patent that the squeeze plates be independently controlled for velocity, it is submitted that independent claim 9 is allowable over the Larsen patent. For these same reasons, it is submitted that claims 10-19 are similarly allowable.

It will also be noted that dependent claims 12-15 and 17-19 have further limitations related to the velocity control of the present invention, and such further limitations are also neither disclosed nor made obvious by the Larsen patent. Therefore, these claims are additionally allowable in view of each of these limitations over the Larsen patent.

In paragraph 5, claims 1-18 were rejected under 35 USC § 102(f)/(g) as being anticipated by the Jacobsen patent. However, as the examiner also noted, this rejection would be overcome by the submission of an indication that the present invention and

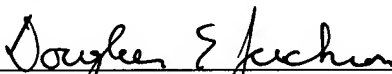
that of the Jacobsen patent were commonly owned at the time that the invention was made. Therefore, provided herewith is an Affidavit of Common Ownership.

In paragraphs 7 and 8, claims 1-18 were also rejected under the judicially created doctrine of obvious-type doubling patenting over the Jacobsen patent and over copending application 10/271,538 (a divisional application of the Jacobsen patent). However, as noted by the examiner in paragraph 6, a timely filed terminal disclaimer would overcome each of these rejections. Therefore, also provided herewith are Terminal Disclaimers are each rejection.

For all of the foregoing reasons, it is submitted that the present application is in condition for allowance and such action is solicited.

Respectfully submitted,

Date: June 11, 2003


By: Douglas E. Jackson
Registration No.: 28,518

LARSON & TAYLOR, PLC • 1199 North Fairfax St. • Suite 900 • Alexandria, VA 22314

ATTACHMENT A
Am ndments to the Specification

At the following locations, a marked up copy of the replaced/new paragraph is provided.

Page 1, lines 6-9.

B1

The present invention relates to a method of producing mould parts on a mould string apparatus of the kind set forth in the preamble of claim 1 and to a string moulding apparatus for producing mould parts ~~of the kind set forth in the preamble of claim 9~~ in which the mould parts are produced by introducing a compressible particulate moulding material in the moulding chamber and then moving a squeeze plate and a pivoted squeeze plate towards each other to squeeze the mould part.

Page 2, lines 22-28.

B2

It is the object of the invention to provide a method of producing mould parts on a mould string apparatus of the kind referred to above, in which the bilateral squeezing process can be controlled in a better way. ~~This object is achieved by the characterising features of claim 1.~~ By controlling the velocity of the squeeze plate and the velocity of the pivoted squeeze plate independently, the squeezing process can be controlled such that the mould part can be positioned at the moulding chamber front at the end of the squeezing process.

Page 3, lines 1-17.

B3

It is another object of the invention to provide a string moulding apparatus for producing mould parts of the kind referred to above, in which the bilateral squeezing process can be controlled in a better way. ~~This object is achieved by the characterising features of~~

claim 9. By controlling the velocity of the squeeze plate and the velocity of the pivoted squeeze plate independently, the squeezing process can be controlled such that the mould part will be placed at the moulding chamber front at the end of the squeezing process.

Page 13, line 29, add the following paragraph.

According to an embodiment of the invention, the velocity of the squeeze plate and the velocity of the pivoted squeeze plate can be such that the squeeze plate and the pivoted squeeze plate move towards one another with equal velocity during at least a part of the squeezing step.

ATTACHMENT B

Amendments to the Claims

Following herewith is a complete listing of the claims, including a marked copy of the currently amended claims.

1. (currently amended) Method of producing mould parts on a string moulding apparatus, the apparatus comprising a moulding chamber between a squeeze plate and a pivoted squeeze plate in which both the squeeze plate and the pivoted squeeze plate can move in a direction towards each other and in a direction away from one another, said method comprising the steps of:

- introducing a compressible particulate moulding material in the moulding chamber and then
- squeezing the moulding material by moving the squeeze plate and the pivoted squeeze plate towards one another to form a mould part,
characterized by the step of said squeezing step including the step of controlling the a velocity of the movement of the squeeze plate and the a velocity of the movement of the pivoted squeeze plate independent from one another during the squeezing step of the mould part.

2. (currently amended) Method according to claim 1, ~~characterized by the step of~~ wherein said controlling step controls the velocity of the squeeze plate and the velocity of the pivoted squeeze plate such that they the squeeze plate and the pivoted squeeze plate move in the a same direction during at least a part of the squeezing ~~step of the mould.~~

3. (currently amended) Method according to claim 2, ~~characterized by the step of~~ wherein said controlling step controls the velocity of the squeeze plate and the velocity of the pivoted squeeze plate such that either the squeeze plate or the pivoted squeeze plate is slowed down abruptly for creating a shock effect.

4. (currently amended) Method according to claim 2, ~~characterized by the step of~~ wherein said controlling step controls the velocity of the squeeze plate and the velocity of the pivoted squeeze plate such that the pivoted squeeze plate is reversed during the squeezing operation~~step~~.

135 5. (currently amended) Method according to claim 2, ~~characterized by the step of~~ wherein said controlling step controls the velocity of the squeeze plate and the velocity of the pivoted squeeze plate such that the squeeze plate and the pivoted squeeze plate they move towards one another with different velocities~~y during at least a part of the squeezing of the mould~~step.

6. (currently amended) Method according to claim 1, ~~characterized by the step of~~ wherein said controlling step controls the velocity of the squeeze plate and the velocity of the pivoted squeeze plate such that the squeeze plate and the pivoted squeeze plate they move towards one another with equal velocity during at least a part of the squeezing of the mouldstep.

7. (currently amended) Method according to claim 1, ~~characterized in that~~wherein the velocity of the squeeze plate and the velocity of the pivoted squeeze plate are controlled according to a predetermined velocity versus time profile.

8. (currently amended) Method according to claim 1, ~~characterized in that~~wherein the moulding chamber includes a front into which the pivoted squeeze plate is introduced, and wherein the velocity of the pivoted squeeze plate is controlled such that the pivoted squeeze plate is positioned at the moulding chamber front at the end of the squeezing of the mouldstep.

9. (currently amended) String moulding apparatus for producing mould parts comprising:

- a moulding chamber between a squeeze plate and an associated pivoted squeeze plate between which a moulding chamber is defined, and in which moulding

- 35
- chamber mould parts are produced by introducing a compressible particulate moulding material in the moulding chamber, and then
 - a moving means for moving the squeeze plate and the pivoted squeeze plate towards each other to squeeze the compressible particulate material in the moulding chamber into the mould part; and
- characterized in that a controller which controls said moving means so that a the velocity of the squeeze plate and the a velocity of the pivoted squeeze plate are controlled independently from one another as said moving means moves the squeeze plate and pivoted squeeze plate to form during squeezing of the mould part.

10. (currently amended) Apparatus according to claim 9, ~~characterized in that~~ wherein said moving means includes a first actuator driving the squeeze plate and a second actuator driving the pivoted squeeze plate ~~3~~ which said first and second actuators are independently powered.

11. (currently amended) Apparatus according to claim 9, ~~characterized in that~~ wherein said moving means includes a first hydraulic actuator driving the squeeze plate which is powered by a first pump, and a second hydraulic actuator driving the pivoted squeeze plate which is powered by a second pump ~~34~~.

12. (currently amended) Apparatus according to claim 10, further comprising a first sensor for producing a signal corresponding to the velocity of the squeeze plate, and ~~comprising a first~~ second sensor for producing a signal corresponding to the velocity of the pivoted squeeze plate.

13. (currently amended) Apparatus according to claim 12, ~~further by comprising~~ wherein a said controller which receives the signals from the first and second sensors and controls the velocity of the squeeze plate and the pivoted squeeze plate in response to these signals.

14. (currently amended) Apparatus according to claim 13, ~~characterized in that~~ further including a number of operator selectable or automatically selectable predetermined velocity versus time profiles for the squeeze plate and the pivoted squeeze plate which are stored in the controller.

15. (currently amended) Apparatus according to claim 14, ~~characterized in that~~ wherein the controller controls the speed of the squeeze plate and the pivoted squeeze plate during the squeezing of the mould according to one of the speed versus time profiles stored in the controller.

16. (currently amended) Apparatus according to claim 11, ~~characterized in that~~ wherein the first pump and the second pump are ~~of the variable displacement~~ pump type, whereby ~~the displacements~~ of the first pump and the second pump are set according to a respective signal from the controller.

17. (currently amended) Apparatus according to claim ~~13~~ 19, ~~characterized in that~~ wherein the controller, the first sensor, the first pump and the first actuator form a closed loop PID control system.

18. (currently amended) Apparatus according to claim ~~13~~ 19, characterized in that the controller, the second sensor, the second pump and the second actuator form a closed loop PID control system.

19. (new) Apparatus according to claim 11, further comprising a first sensor for producing a signal corresponding to the velocity of the squeeze plate, and a second sensor for producing a signal corresponding to the velocity of the pivoted squeeze plate.